DISTRICT PAVING

History of Systems Adopted by the Government.

THE WORK UNDER OLD CORPORATION

Smooth Pavements, the Concrete and the Asphalt

SKETCH BY MR. BAILEY

The following history of pavements laid in the District, prepared by Mr. George H. Bailey, formerly in charge of the street department, was incorporated in the annual report of Capt. Beach, the Engineer Commissioner, it being believed that Mr. Bailey's sketch contains information not easily accessible elsewhere.

There were laid by the old corporation of Washington and Georgetown 234,288 square yards of pavements, divided as follows: Cobble, 21,944; rubble and blue rock, 107,339; concrete, 4,156, and wood, 100,859.

The following were laid by the board of public works and the first board of Commissioners:

	Square yards.
Cobble	164,618
Rubble and blue rock	171,145
Granite block	99,462
Trap rock and seneca	187,350
Macadam	205,282
Wood	1,087,758
Concrete and neuchatel	830,969

Between 1875 and 1878 wood pavements to the amount of 315,451 square yards were replaced by—

	Square yards.
Trap block	17,050
Granite rock	43,207
Concrete and neuchatel	255,194
Total	315,451

So that in 1878, at the inauguration of the present form of government, the following pavements were in existence:

	Square yards.
Stone of all kinds	751,838
Macadam	205,282
Wood of all kinds	873,146
Concrete and neuchatel	835,125
Total	2,665,391

Smooth Pavements.

At the time the board of public works commenced operations, April, 1871, the experience with smooth pavements in this country was extremely limited. Many cities, in the west especially, had recently introduced wood pavements, which appeared to give satisfaction, but, though fulfilling the conditions of a smooth and noiseless pavement, had not been in use long enough to test its durability. Many inventors turned their attention to perfecting this form of pavement, many patents were granted, and the District for a few years was a fertile field for testing them. Among them were—

	Square yards.
De Golyer	178,290
Ballard	141,739
Taylor & Filbert	195,985
Phillips (round block)	70,686
Smith (round block)	23,347
Morse	52,089
Perry	24,949
Miller & Stowe	270,943
Biedler Keystone	40,942
Flannigan	56,593
Ingersoll	21,156
Hayes	11,859
Other patents not known (laid by old corporation)	100,859
Total	1,188,597

The prices for these varied from $2 to $4.20 per square yard. Signs of decay in these pavements were soon apparent. Within two or three years the replacement of them commenced, and, as before stated, between 1875 and 1878 over 315,000 square yards had been removed and replaced by stone or concrete. From this time a large proportion of each annual appropriation was spent on replacing these pavements, which decayed so rapidly that many of the streets on which they were laid became almost impassable. The condition of these streets was well described by Capt. Greene in 1881. In regard to New Jersey avenue, said he: "The block have disintegrated into woody fiber, about the size of the little finger, and this was mixed with the gravel and dirt of the foundation of the street. The whole is thouroughly soaked with moisture, and makes a black muck about six inches deep, covering the whole street." Many of the wood pavements were in this condition before they were removed. The last of these was removed in 1889.

Concrete Work.

The other forms of smooth pavements inaugurated by the corporation of Washington and by the board of public works were known as concrete pavements. These, though laid under several different patents, consisted essentially of a base of broken stone 4 to 6 inches thick, cemented together with coal tar, covered with a binder coat about 1 inch thick, composed of pebbles or fine broken stone and coal tar. The wearing surface varied according to the patents, but consisted essentially of small gravel and sand, or stone dust, cemented by a product of coal tar. In some of the later pavements a small percentage of asphalt was used with the coal tar in the wearing surface.

Original concrete pavements are thus designated:

	Square yards.
Evans	187,271.22
Vulcanite	180,240.58
Parisen	66,487.64
Taylor	26,134.67
Scharf	191,401.08
Abbott	87,018.67
Bailey	2,861.81

The original concrete pavements showed signs of failure very soon after they were laid. Thus of 187,271 square yards of Evans pavement laid in 1872-73, at a cost of $3.20 per square yard, about 158,000 square yards were resurfaced within two years. Of 66,487 square yards of Parisen pavement laid in 1872 to 1875, 46,654 square yards had been resurfaced in 1878, and the balance in 1880-'81. The Scharf and the Filbert vulcanite pavements stood much better. Many of them laid in 1872 to 1875, were not resurfaced for five or seven years, and quite a number of them had been laid ten and fifteen years before being resurfaced.

Asphalt Pavements.

Asphalt pavements as at first laid consisted of neuchatel and grahamite. Neuchatel is a natural bituminous limestone which is reduced to powder, placed on the street in a heated state, compressed by rollers or large iron rammers and laid on a base of hydraulic cement concrete, 6 to 8 inches thick. The following streets were laid with neuchatel pavement between 1875 and 1877: Pennsylvania avenue between 1st and 6th streets; I street northwest between 13th and 15th streets, and Grant place between 9th and 10th streets, amounting to 31,389 square yards. The objection to this pavement was that it was very slippery, especially in wet weather.

Asphalt pavements laid according to specifications of August, 1878, consisted of a base of hydraulic cement concrete six inches thick and a wearing surface of asphalt, the basis of which, or paving cement, was refined asphaltum mixed with residuum of petroleum, carbonate of lime and alumina. The pavements for which bids were made October 19, 1878, and awarded to J. S. Baldwin, consisted of a base of hydraulic cement concrete six inches thick and two and a half inches of asphalt wearing surface. The pavement is known as "Grahamite," invented by E. J. De Smedt. The constituent parts, apart from concrete base, are thus specified:

First, refined Trinidad asphalt; second, heavy pure petroleum oil; third, very fine sand containing about 15 per cent amorphous carbonate of lime, or 10 per cent pure hydrosilicate of aluminum. By mixing petroleum oil and asphalt in the proportion of four or five asphalt and one of oil, the matrix of the pavement called asphaltic cement is manufactured. The asphaltic cement is mixed with sand in the proportion of fifteen to eighteen of cement to eighty-five or eighty-two of sand: the two ingredien's are heated separately to about 300 degrees F., and the mixing performed in a twin pug mill.

The asphalt prepared in this manner is brought to the ground in heated carts at a temperature of about 250 degrees. It is spread in two coats; the first, about one-half inch thick, called the protecting or cushion coat, may be laid richer in asphalt and is consolidated by rolling. The second coat, or wearing surface, exceeding by about two-fifths the ultimate thickness required, is carefully spread with iron rakes and compacted by ramming or rolling. Hydraulic cement is then spread or dusted over the surface, and rolled with a heavy roller. This is essentially the specification under which asphalt pavements have been laid from 1877 to 1887. In 1887 and 1888 a departure was made from what may be termed the standard asphalt pavement in the use of what is known as the coal-tar distillate, which was very similar to the old Scharf and vulcanite pavements.

Comparative Durability.

In Captain Griffith's report for 1887 a statement of the comparative durability of asphalt and coal-tar pavements is given. He says: "Of the Evans pavements 157,324 square yards were resurfaced within two years after laying. The mean average expense for maintenance of 745,305 square yards is 5¼ cents per square yard for fifteen years. That a durable coal-tar pavement can be laid is proven by the fact that the vulcanite pavements have only averaged 2.9 cents per square yard per annum for fourteen years' maintenance. The annual cost of maintenance of 86,501 square yards of asphalt and neuchatel pavements was 1.9 cents per square yard."

While the superior durability of asphalt pavements is shown, Captain Griffin says: "The return to the distillate pavement was virtually forced upon the Commissioners by the clause in the appropriation act of 1886-'87 which provided that under this appropriation no contract shall be made for making or repairing concrete or asphalt pavements at a higher price than $2 per square yard of a quality equal to the best laid in the District prior to July 1, 1886, and with the same depth of base.

"The lowest proposal received for standard asphalt pavement was $2.25 per square yard, the ruling price for the past few years. This bid could not be considered, and as smooth pavements had become a necessary luxury in the city, the bids for asphalt block and coal-tar distillate were perforce accepted."

The amount of coal-tar distillate pavement laid was, in 1887, 36,273 square yards, and in 1888, 86,714 square yards. Total, 122,987 square yards. These pavements were composed and laid in the following manner: They consisted of base and binder 4½ inches in depth when compacted, and a wearing surface of 1½ inches in thickness when compacted. The base was composed of clean broken stone that would pass through a 3-inch ring, well rammed and rolled, to the depth of 4 inches, and thoroughly coated with No. 4½ coal-tar paving cement in proportion of about 1 gallon to the square yard of base.

The second or binder course was composed of clean broken stone, thoroughly screened, not exceeding 1½ inches in largest dimensions, and No. 4 coal-tar paving cement. The stone to be heated to a temperature between 230 and 250 degrees F. by passing through revolving heaters and thoroughly mixed by machinery with the paving cement in about the proportion of 1 gallon of No. 4 tar to 1 cubic foot of stone; to be hauled upon the work, spread upon the base course at least 2 inches thick, and immediately rammed and rolled with hand and steam roller while in a hot, plastic condition.

Wearing Surface.

The wearing surface was composed of—

	Per cent.
Clean, sharp sand	63 to 58
Broken stone and rock dust	28 to 23
Paving cement	13 to 15
Hydraulic cement	9
Slaked lime	15
Flour of sulphur	1

(See report of 1887, pp. 331, 332, for specifications.)

The cost of maintenance of coal tar pavements laid in 1887 was 4.65 cents per yard per year for a period of ten years, and that laid in 1888, 5.96 cents per yard per year for a period of nine years. Of these pavements 14,600 yards were found so badly worn at the end of ten years that it was deemed best to remove them entirely and substitute standard asphalt. In future repairs in these pavements in many cases it will be necessary to treat them in this manner. To resurface an asphalt pavement it is only necessary to strip off the surface, and the original grade and cross-section of the street are preserved. With the coal tar or concrete pavements the base binder and surface unite, forming a solid mass. If a new surface is applied over the old pavement the gutters become almost obliterated, or if the gutters are cut out and lowered the crown of the street is increased to a dangerous extent. It is especially difficult to resurface a concrete roadway along a railroad track, and the only practical way is to remove it entirely and substitute standard asphalt. For this reason, apart from the proved superiority of standard asphalt in other respects, it is not probable that any more coal tar distillate pavements will be laid.

In 1888, among other forms of pavement, what was known as "new combination asphalt pavement on hydraulic base" was specified, and Corcoran street between 15th and New Hampshire avenue was laid in this manner. The restriction as to price remaining, an attempt was made to keep within the limit by specifying a base of hydraulic cement concrete, four inches thick, and instead of a wearing surface two and one-half inches thick, including a cushion coat of one-half inch, a binder course one and one-half inches thick was introduced. This consisted of clean broken stone not exceeding one and one-fourth inches in largest dimension and No. 4 coal tar paving cement. The wearing surface was composed of refined Trinidad asphalt, heavy petroleum residuum, fine sand, fine stone dust and fine powder of carbonate of lime. This was essentially the same as the pavement now in use, but with four-inch hydraulic base instead of six-inch. A four-inch base was considered sufficient for the light travel on many of the streets of Washington, and the introduction of the binder course was believed and has since proved to improve the quality of the pavement.

Gutters Deteriorate.

Early in the experience with asphalt and coal tar pavements it was found that the gutters deteriorated more rapidly than the rest of the pavement. This was especially true on streets having a light longitudinal grade, and even on streets having a good fall it was found that the softening of the pavements allowed the hoofs of horses and wheels of vehicles standing for any length of time to make indentations which the light travel in these places never removed. These formed hollows to hold the water, which rapidly rotted out the asphalt.

To obviate this difficulty, granite blocks were introduced in 1880, and in 1888 vitrified brick, or block, commenced to be, and are now, used for the gutters of asphalt street pavements with satisfactory results. The gutters for a width of two feet are paved with vitrified blocks laid on concrete.

In 1878 the test of asphalt block pavements was commenced, and since then the use has been continued. At this date about 360,000 square yards have been laid. Most of these pavements have been laid on a gravel base. With the exception of some of the earlier pavements, which were laid with defective blocks, they have given excellent satisfaction. About 25,000 square yards of these earlier pavements have been surfaced with sheet asphalt; and all are now in good condition.

Several of the old macadam and cobble pavements in the city have been surfaced with sheet asphalt. Some of them have been done ten years, and appear to wear as well as those laid on concrete base.

A Slight Misunderstanding.

From Puck.

Judge—"Did you see the prisoner at the bar?"

Witness—"Naw; when I see him he was on the street where the bartender chucked him out."

AUCTION SALES OF REAL ESTATE, &c.

Today.

Duncanson Bros., Aucts., 9th and D sts. n.w.—Trustees' sale of lot in Fairview Heights, on Friday, Dec. 15, at 4:30 p.m. Mahlon Ashford and Charles M. Barrick, trustees.

Thomas J. Owen, Auct., 913 F st. n.w.—Trustees' sale of No. 319 4th st. s.e., on Friday, Dec. 15, at 4:30 p.m. Albert A. Wilson and John B. Larner, trustees.

Tomorrow.

James W. Ratcliffe, Auct., 920 Pa. ave. n.w.—Sale of matched bay team, rockaway and harness, on Saturday, Dec. 16, at 12 m., at auction rooms.

Marcus Notes, Auct., 637 La. ave. n.w.—Sale of personal effects and household goods for storage charges, on Saturday, Dec. 16, at 10 a.m., at auction rooms.

Walter B. Williams & Co., Aucts., 10th and D sts. n.w.—Sale of doll carriages, sleighs, wagons, chairs, &c., on Saturday, Dec. 16, at 10 a.m., at auction rooms.

James W. Ratcliffe, Auct., 920 Pa. ave. n.w.—Sale of furniture, carpets, &c., on Saturday, Dec. 16, at 10 a.m.; also, at 12 m., horses, carriages, wagons, harness, &c.

C. G. Sloan & Co., Aucts., 1407 G st. n.w.—Sale of household effects, &c., on Saturday, Dec. 16, at 10 a.m.; also, at 12 m., horses, harness, carriages, &c., at auction rooms.

Walter B. Williams & Co., Aucts., 10th and D sts. n.w.—Sale of household effects, carpets, china and glassware, &c., on Saturday, Dec. 16, at 10 a.m., at auction rooms.

James W. Ratcliffe, Auct., 920 Pa. ave. n.w.—Trustee's sale of building in alley between 18th, 19th, L and M sts. n.w., on Saturday, Dec. 16, at 4:30 p.m. Walter Heiston, surviving trustee.

Magrath & Kennelly, Aucts., 205 11th st. n.w.—Sale of horses, on Saturday, December 16, 1899, at 10 a.m., within our sales rooms.

MEMBERS OF CONGRESS

Where Senators and Representatives Are Located.

Senators.

Aldrich, N. W., R.I., Arlington.
Allison, W. B., Iowa, 1124 Vt. ave.
Atwater, J. W., N. C., 307 East Cap. st.
Bacon, A. O., Georgia, 1757 Oregon ave.
Baker, Lucien, Kan., Normandie.
Bate, W. B., Tenn., The Ebbitt.
Butler, Marion, N.C., 1742 Q st.
Berry, J. H., Ark., The Metropolitan.
Burrows, J. C., Mich., The Dewey.
Beveridge, Indiana, 1110 13th st.
Clark, C. D., Wyo., 1000 22d st.
Cockrell, F. M., Mo., 1518 R st.
Carter, T. H., Mont., 1432 Stoughton st.
Clark, Wm. A., Mont., Arlington.
Cullom, S. M., Ill., 1413 Mass. ave.
Culberson, C. A., Texas, The Richmond.
Caffery, Donelson, La., 2110 O st.
Chandler, Wm. E., N.H., 1421 I st.
Daniel, J. W., Va., St. James.
Davis, C. K., Minn., 1703 K st.
Depew, C. M., N.Y., Corcoran House.
Deboe, W. J., Ky., Maltby.
Elkins, S. B., W. Va., 1626 K st.
Fairbanks, C. W., Ind. 1800 Mass. ave.
Frye, W. P., Me., The Hamilton.
Foraker, J. B., Ohio, 1500 16th st.
Foster, A. G., Wash., The Cairo.
Gallinger, J. H., N. H., The Dewey.
Gear, J. H., Iowa, The Portland.
Harris, Wm. A., Kan., 1016 13th st.
Hawley, J. R., Conn., 1716 N st.
Heitfeld, Henry, Idaho, 112 Mass. ave. n.e.
Hansbrough, H. C., N. D., 2033 Fla. ave.
Hale, Eugene, Me., 1001 16th st.
Hanna, M. A., Ohio, The Arlington.
Hoar, Geo. F., Mass., The Richmond.
Jones, J. P., Nev., 1805 19th st.
Jones, J. K., Ark., 915 M st.
Kyle, J. H., S. D., 201 N. Cap. st.
Kenney, R. R., Del., 1710 16th st.
Kean, John, N. J., 1322 16th st.
Lodge, H. C., Mass., 1765 Mass. ave.
Lindsay, Wm., Ky., The Shoreham.
Morgan, J. T., Ala., 315 4½ st. n.w.
Mason, W. E., Ill., 1423 Chapin st.
McBride, Geo. W., Oregon, 1 B st. n.w.
Martin, T. S., Va., The Gordon.
McMillan, James, Mich., 1114 Vt. ave.
McLaurin, J. L., S. C., The Oxford.
McEnery, S. D., La., The Metropolitan.
McComas, L. E., Md., 1728 R. I. ave.
McCumber, P. J., N. D., 1534 22d st.
Nelson, Knute, Minn., 649 E. Capitol st.
Pritchard, J. C., N. C., 902 E. Capitol st.
Platt, T. C., N. Y., Arlington.
Pettus, E. W., Ala., 34 B n.e.
Pettigrew, R. F., S. Dak., 1750 Q st.
Perkins, Geo. C., Cal., Portland.
Penrose, Boies, Normandie.
Proctor, Redfield, Vt., 1535 L st. n.w.
Platt, O. H., Conn., The Arlington.
Quarles, J. V., Wis., Richmond.
Ross, Jonathan, Vt., Richmond.
Rawlins, J. L., Utah, 13 1st n.e.
Stewart, W. M., Nev., 1800 F st.
Spooner, J. C., Wis., Arlington.
Simon, Joseph, Oregon, Normandie.
Shoup, G. L., Idaho, Normandie.
Sewell, W. J., N. J., Normandie.
Scott, W. B., W. Va., Arlington.
Turley, T. B., Tenn., Ebbitt.
Tillman, B. R., S. C., 1106 E. Capitol st.
Thurston, J. M., Neb., Cairo.
Teller, H. M., Colo., Colonial.
Taliaferro, J. P., Fla., Raleigh.
Turner, Geo., Wash., The Portland.
Vest, Geo. G., Mo., 1204 P st. n.w.
Wolcott, E. O., Col., 1221 Conn. ave.
Wetmore, G. P., R. I., 1609 K st.
Warren, F. E., Wyo., 1848 Wyoming ave.

Representatives.

Henderson, D. B., Normandie.
Acheson, E. F., Pa., 217 N. Cap.
Adams, Robert, Pa., Albany.
Adamson, W. C., Ga., Metropolitan.
Allen, H. D., Ky., Ebbitt.
Atwater, J. W., N. C., 122 11th st. n.e.
Alexander, D. S., N. Y., Concord.
Allen, A. L., Me., 418 Stanton place.
Babcock, J. W., Wis., 11 B n.w.
Bailey, J. W., Texas, Riggs.
Bailey, W. J., Kan., 1529 I n.w.
Ball, T. H., Texas, Cairo.
Baker, W. B., Md., 215 N. J. ave. n.w.
Bankhead, J. H., Ala., Riggs.
Barber, L. H., Pa., Normandie.
Barham, J. A., Cal., Ebbitt.
Barney, S. S., Wis., Wellington.
Bartholdt, R., Mo., Congressional.
Bell, John C., Colo., 1135 12th n.w.
Bellamy, J. D., N. C., Normandie.
Benton, M. E., Mo., 1723 Q n.w.
Berry, A. S., Ky., 1744 P n.w.
Bingham, H. H., Pa., Normandie.
Bishop, R. P., Mich., 132 A n.e.
Boreing, V., Ky., 200 E. Capitol.
Boutelle, Chas., Me., Grafton.
Boutell, H. S., Ill., 1313 K n.w.
Bowersock, J. D., Kan., Hamilton.
Bradly, T. J., N. Y., Riggs.
Brantly, W. G., Ga., Riggs.
Breazle, P., La., Riggs.
Brenner, J. L., Ohio, Ebbitt.
Brewer, Willis, Ala., 1330 Columbia road.
Brick, A. L., Ind., Hamilton.
Bromwell, J. H., Ohio, 1347 Q n.w.
Brosius, M., Pa., Elsmere.
Broussard, R. F., La., Riggs.
Brown, S. W., Ohio, Varnum.
Brownlow, W. F., Tenn., 201 A s.e.
Brundige, S., jr., Ark., Wellington.
Bull, M., R. I., Cochran.
Butler, T. S., Pa., 1623 H n.w.
Burke, C. H., S. D., 1333 R n.w.
Burke, R. E., Texas, Metropolitan.
Burkett, E. J., Neb., Hamilton.
Burnett, J. L., Ala., 34 B st. n.e.
Burleigh, E. C., Me., Richmond.
Burleson, A. S., Texas, Cairo.
Burton, T. E., Ohio., 732 17th n.w.
Calderhead, W. A., Kan., 2149 Fla. av. n.w.
Caldwell, B. F., Ill., Ebbitt.
Campbell, A. J., Mont., 1601 31st n.w.
Cannon, J. G., Ill. Cochran.
Capron, W. T., N. C., 1327 10th st. n.w.
Carmack, E. W., Tenn., 131 B st. s.e.
Chickering, C. A., N. Y., Hamilton.
Clark, Champ, Mo., 617 Md. ave. n.e.
Clarke, F. G., N. H., Normandie.
Clayton, B. T., N.Y., 1324 Mass. ave. n.w.
Clayton, H. D., Ala., Willard's.
Cochran, C. F., Mo., National.
Connell, Wm., Pa., 18 Wash. L. & T. Bldg.
Cooney, Jas., Mo., 221 A s.e.
Cooper, H. A., Wis., Raleigh.
Cooper, S. B., Tex., Metropolitan.
Corliss, J. B., Mich., The Dewey.
Cousins, R. G., Iowa, Shoreham.
Cox, N. N., Tenn., The Varnum.
Cowherd, W. S., Mo., Ebbitt.
Cromer, G. W., Ind., Dewey.
Crowley, J. B., Ill., 929½ N. Y. ave. n.w.
Crump, R. O., Mich., 413 A s.e.
Crumpacker, E. D., Ind., Willard.
Curtis, Chas., Kan., 2012 R n.w.
Cusack, Thos., Ill., Raleigh.
Cushman, Wash., 922 M n.w.
Dahle, H. B., Wis., The Wellington.
Daly, W. M., N. J., Congressional.
Dalzell, John, Pa., 1605 N. H. ave. n.w.
Davenport, S. A., Pa., Riggs.
Davenport, S. W., Pa., Riggs.
Davey, La., Riggs.
Davidson, J. H., Wis., Wellington.
Davis, R. W., Fla., Metropolitan.
Dayton, A. G., W. Va., Varnum.
Denny, James W., Md., Baltimore, Md.
De Graffenried, R. C., Texas, Wellington.
De Armond, D. A., Mo., Varnum.
De Vries, M., Cal., 1623 H n.w.
Dick, Chas., Ohio, care of Repub. Hdqtrs.
Dinsmore, H. A., Ark., 1814 K n.w.
Dolliver, J. P., Iowa, Hamilton.
Dougherty, Jno., Mo., Washington College.
Dovener, B. B., W. Va., Willard's.
Driggs, E. H., N. Y., Riggs.
Driscoll, M. E., N.Y., Arlington.
Eddy, F. M., Minn., Varnum.
Elliott, Wm., S.C., Normandie.
Emerson, L. W., N.Y., Normandie.
Epes, Sydney P., Va., 1325 G st. n.w.
Esch, John J., Wis., 922 I st. n.w.
Faris, G. W., Ind., 812 N. Y. ave. n.w.
Finley, D. E., S.C., National.
Fitzgerald, J. J., N.Y., 1324 Mass. ave. n.w.
Fitzpatrick, T. Y., Ky., The Wellington.
Fleming, W. H., Ga., Cairo.
Fletcher, L., Minn., Richmond.
Flynn, Dennis T., Okla., 1372 Harvard st.
Fordney, J. W., Mich., 1119 K n.w.
Foster, Geo. P., Ill., 924 14th n.w.
Foss, G. E., Ill., Grafton.
Fowler, C. N., N.J., 1406 16th n.w.
Freer, R. H., W. Va., Varnum.
Gaines, J. W., Tenn., 1111 H n.w.
Gamble, R. J., S. D., Normandie.
Gardner, W., Mich., 1303 Clifton st.
Gaston, A., Pa., Varnum.
Gibson, H. R., Tenn., 31 C n.e.
Gilbert, G. G., Ky., Fredonia.
Gill, J. J., Ohio, Normandie.
Gillett, F. H., Mass., Everett.
Glynn, M. H., N. Y., Congressional.
Gordon, R. B., Ohio, Arlington.
Graham, W. H., Pa., 1338 N. Y. ave. n.w.
Greene, H. D., Pa., 425 4th n.w.
Greene, W. S., Mass., 1200 Mass. ave. s.e.
Griffith, F. M., Ind., 411 Fla. ave. n.w.
Griggs, J. W., Ga., Bancroft.
Grosvenor, C. H., Ohio, Dewey.
Grout, W. W., Vt., Arlington.
Grow, G. A., Pa., Willard's.
Hall, J. K. P., Pa., Cochran.
Hamilton, E. L., Mich., 1119 K n.w.
Haugen, G. N., Iowa, Normandie.
Hay, Jas., Va., 1505 Q n.w.
Hawley, R B., Texas, Room 8, 1517 H n.w.
Heatwole, J. P., Minn., Gordon.
Hemenway, J. A., Ind., Normandie.
Hedge, Thos., Iowa, Portland.
Hendge, Thomas, Iowa, The Portland.
Henry, R. L., Texas, Willard's.
Henry, E. S., Conn., 1421 K n.w.
Henry, P., Miss., Metropolitan.
Hepburn, W. P., Iowa, 1124 E. Capitol.
Hill, E. J., Conn., Cochran.
Hitt, R. R., Ill., 1507 K n.w.
Hoffeker, J. H., Del., Cochran.
Hopkins, A. J., Ill., Willard's.
Howard, W. M., Ga., Bancroft.
Howell, B. F., N. J., Normandie.
Hull, J. A. T., Iowa, 1720 21st n.w.
Jack, S. M., Pa., Dewey.
Jenkins, John J., Wis., Wellington.
Jett, T. M., Ills., Dewey.
Johnston, D. E., W. Va., 16 3d n.e.
Jones, W. A., Va., Varnum.
Jones, W. L., Wash., 1015 Mass. ave. n.e.
Joy, C. F., Mo., Cleveland Park.
Kahn, Julius, Cal., Hamilton.
Kerr, W. S., Ohio, Ebbitt.
Ketcham, J. H., N. Y., Hamilton.
Kitchin, W. W., N.C., National.
Kleberg, R., Texas, 214 N. Capitol.
Kluttz, T., N. C., Willard's.
Knox, W. S., Mass., Cochran.
Lacey, J. F., Iowa, 1700 15th n.w.
Lamb, John, Va., National.
Landis, C. B., Ind., National.
Lane, J. R., Iowa, Cairo.
Lanham, S. W. T., Texas, National.
Latimer, A. C., S. C., 501 B n.e.
Lawrence, G. P., Mass., Cochran.
Lentz, J. J., Ohio, Portland.
Lester, R. E., Ga., Cairo.
Levy, J. M., N.Y., Gordon.
Lewis, E. B., Ga., Metropolitan.
Littlefield, C. E., Maine, Hamilton.
Linney, R. Z., N. C., 10 B n.e.
Littauer, L. N., N. Y., Albany.
Little, J. S., Ark., 1013 Mass. ave. s.e.
Livingston, L. F., Ga., 2005 Kalorama av.
Lloyd, J. T., Mo., Varnum.
Long, Chester T., Kan., 1321 M n.w.
Lorimer, Wm., Pa., Raleigh.
Loud, E. F., Cal., Everett.
Loudenslager, H. C., N. J., Dewey.
Lovering, Wm. C., Mass., 1824 Mass. ave.
Lybrand, A., Ohio, Willard.
Maddox, J. W. Ga., Metropolitan.
Mahon, T. M., Pa., Dewey.
Mann, J. R., Illinois., Dewey.
Marsh, B. F., Ill., 121 Md ave. n.e.
May, M., N. Y., Normandie.
McCall, S. W., Mass., Shoreham.
McCleary, J. T., Minn., Regent.
McClellan, G. B., N. Y., 1445 R. I. ave.
McCulloch, P. D., Ark., Wellington.
McDowell, J. A., Ohio, The Colonial.
McLain, F. A., Miss., 52 B n.e.
McPherson, S., Iowa, Portland.
McRae, T. C., Ark., Metropolitan.
Meekison, D., Ohio, 1921 16th n.w.
Mercer, D. H., Neb., 1303 Roanake n.w.
Metcalf, V. H., Cal., Arlington.
Meyer, Adolph, La., 1700 Q n.w.
Miers, R. W., Ind., Hawthorne, 1527 I n.w.
Miller, J. M., Kan., 1201 Q n.w.
Minor, E. S., Wis., 49 D s.e.
Mondell, F. W., Wyo., 1837 M n.w.
Moody, M. A., Ore., Shoreham.
Moody, W. H., Mass., Everett.
Moon, J. A., Tenn., 519 4th n.w.
Morgan, S. R., Ohio, Regent.
Morris, P., Minn., 1225 Conn. ave. n.w.
Mudd, S. E., Md., Willards.
Muller, N., N. Y., Shoreham.
Naphen, H. F., Mass., 1217 L st. n.w.
Needham, J. C., Cal., 100 B n.e.
Neville, Wm., Neb., National.
Newlands, F. G., Nev., Chevy Chase.
Noonan, Ed., Ills., Raleigh.
Norton, J. A., Ohio, Wellington.
Norton, Jas., S.C., Metropolitan.
O'Grady, Jno. E., N. Y., Arlington.
Olmsted, M. E., Pa., Shoreham.
Otey, P. J., Va., Oxford.
Otjen, T., Wis., 227 N. J. ave. s.e.
Overstreet, J., Ind., Ebbitt.
Packer, H. B., Pa., Normandie.
Parker, R. W., N. J., Richmond.
Payne, S. E., N. Y., 1767, Q st. n.w.
Pearre, G. A., Md., The Everett.
Perea, P. N. Mex., Metropolitan.
Pierce R. A., Tenn., National.
Polk, R. K., Pa., Normandie.
Powers, H. H., Vt., Riggs.
Prince, G. W., Ill., 1237 Kenesaw ave. n.w.
Pugh, S. J., Ky., Riggs.
Quarles, J. M., Va., Riggs.
Ransdell, J. R., La., Metropolitan.
Ray, G. W., N. Y., Arlington.
Reeder, W. A., Kan., 115 B s.e.
Reeves, W., Ill., Cairo.
Rhea, J. S., Ky., 521 4th n.w.
Rhea, W. F., Va., National.
Richardson, J. D., Tenn., 1103 6th n.w.
Ridgely, E. R., Kan., 600 Md. ave. n.e.
Riordon, D. J., N. Y., Normandie.
Rixey, J. F., Va., 1721 Q n.w.
Robb, Edw., Mo., Oxford.
Robbins, G. A., Ala., 1765 P n.w.
Roberts, B. H., Utah, Metropolitan.
Roberts, E. W., Mass., 58 B st. n.e.
Robinson, J. M., Ind., Riggs.
Robinson, J. S., Neb., 3 B n.w.
Rodenberg, W. A., Ill., Willard's.
Rucker, W. W., Mo., 2148 Pa. ave. n.w.
Ruppert, Jacob, N. Y., Arlington.
Russell, C. A., Conn., Hamilton.
Ryan, J. W., Pa., Varnum.
Ryan, W. H., N. Y., Regent.
Salmon, J. S., N. J., Riggs.
Scudder, T., N. Y. 1701 Q n.w.
Shafroth, J. F., Colo., 1346 Yale st.
Shackleford, Dorsey W., Mo., 215 East Cap.
Shattuc, W. B., Ohio, Cochran.
Shelden, C. D., Mich., Dewey.
Sheppard, J. L., Tex., Riggs.
Sherman, J. S., N. Y., Normandie.
Showalter, J. B., Pa., 1016 E. Capitol.
Sibley, J. C., Pa., 1116 Vt. ave. n.w.
Sims, T. W., Tenn., Varnum.
Slayden, Jas. L., Texas, 1631 R st. n.w.
Small, J. H., N. C., Varnum.
Smith, D. H., Ky., Riggs.
Smith, G. W., Ill., 1313 Columbia road.
Smith, Wm. Alden, Mich., Gordon.
Smith, S. W., Mich., 1303 Clifton.
Smith, H. C., Mich., 45 Post Bldg.
Snodgrass, C. E., Tenn., Varnum.
Southard, J. H., Ohio, Hamilton.
Spalding, B. F., N. D., 821 N. C. ave. s.e.
Sparkman, S. M., Fla., Metropolitan.
Sprague, C. F., Mass., 1500 R. I. ave. n.w.
Sperry, N. D., Conn., Buckingham.
Spight, Thomas, Miss., Varnum.
Stark, W. L., Neb., 52 B n.e.
Steele, Ind., Dewey.
Stephens, J. H., Texas, 114 Md. ave. n.e.
Stevens, F. C., Minn., Cairo.
Stewart, J. K., N. Y., Normandie.
Stewart, A., Wis., 1705 Conn. ave. n.w.
Stewart, J. F., N. J., Gordon.
Stokes, J. Wm., S. C., 220 2d st. s.e.
Sulloway, C. A., N. H., Varnum.
Sulzer, Wm., N. Y., 131 B n.e.
Sutherland, R. D., Neb., 215 A n.e.
Swanson, C. A., Va., 2017 Mass. ave. n.w.
Talbert, W. J., S. C., National.
Tate, F. C., Ga., 420 6th n.w.
Tawney, J. A., Minn., Dewey.
Tayler, R. W., Ohio, Portland.
Taylor, G. W., Ala., 103 Md. ave. n.e.
Terry, W. L., Ark., Wellington.
Thayer, J. R., Mass., Elsmere.
Thomas, C. R., N. C., Livingstone.
Thomas, Lot, Iowa, Dewey.
Thropp, J. E., Pa., 1915 Mass. ave. n.w.
Tompkins, A. S., N. Y., Portner.
Tougue, T. H., Oregon, 1329 10th n.w.
Turner, Oscar, Ky., Ebbitt.
Underhill, J. Q., N. Y., Cochran.
Underwood, O. W., Ala., Columbia.
Vandiver, Wm. D., Mo., 215 East Cap.
Van Voorhis, H. C., Ohio, Cochran.
Vreeland, E. B., N. Y., Dewey.
Wachter, Frank C., Md., Baltimore, Md.
Wanger, I. P., Pa., 1301 N n.w.
Warner, V., Ill., Cairo.
Waters, R. J., Cal., 29 B n.w.
Watson, J. E., Ind., Normandie.
Weaver, W. L., Ohio, Dewey.
Weeks, Edgar, Mich., 330 A st. s.e.
Weymouth, G. W., Mass., Cochran.
Wheeler, C. K., Ky., Willard's.
White, G. H., N. C., 1814 18th n.w.
Williams, James R., Ill., 102 B st. n.e.
Williams, J. S., Miss., 125 E n.w.
Williams, W. E., Ill. Ebbitt.
Wilson, Edgar, Idaho, 1308 R n.w.
Wilson, F. E., N. Y., Ebbitt.
Wilson, Stanyarne, S. C., Normandie.
Wilson, J. F., Ariz., Varnum.
Wright, C. F., Pa., Gordon.
Young, W. A., Va., Raleigh.
Young, J. R., Pa., 1331 Corcoran st.
Zenor, W. T., Ind., 213 North Capitol.
Zeigler, E. D., Pa., Varnum.

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